ReStore Security System

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**Abstract:**

The purpose of this document is twofold. One purpose is to examine the security issues that are currently present at the Habitat for Humanity ReStore in Searcy, AR. The other, related purpose is to suggest possible solutions to the problem. The problem the ReStore has is with theft. Some people have been taking advantage of the open garage door during store hours by taking merchandise out the back of the store. The ReStore also has been dealing with people taking donations that are dropped off after store hours. The ideal solution would be inexpensive, and able to address both of these issues. The bottom line is that a multiple security camera system that has the ability to record data would be the best option, as long as the price is reasonable. If the price is too steep, then some cheaper alternatives will be recommended. However, these alternatives will sacrifice some of the features of a multi-camera, recording system.

**Introduction:**

The Habitat for Humanity ReStore in Searcy, AR relies on donated merchandise to stay in business. Recently, however, those donations have been put at risk because of issues with theft. The ReStore has a garage door in the back room that is often kept open during store hours to allow new truck shipments to come in. The problem is that some people have taken advantage of the situation by stealing merchandise and leaving out the back through the garage door. Another problem the ReStore is facing involves protecting merchandise after the store closes. Donations that are left outside while the store is closed are frequently being stolen. The purpose of this report is to suggest a possible solution that addresses both of these problems.

**Objectives/Specifications:**

The objective of this project was to find a solution to the security problem that was both effective and inexpensive. The ideal solution would meet all of the following specifications:

* The solution must be inexpensive. Anything above $200 was likely more than the ReStore is willing to spend.
* The solution should be able to prevent theft during store hours.
* The solution should be able to prevent theft while the store is closed.
* The solution should be easy to install and maintain.

**Conceptual Designs/Alternatives:**

Before settling on the final solution, many alternatives were considered. One idea that was briefly entertained was to have a system similar to something one would see at the doors of a Walmart. It would have bars that would detect when merchandise passed through the garage door. This idea, however, was quickly dismissed because it did not meet the design specifications. It would be expensive, difficult to install, and only protect merchandise while the store is open. It was dismissed fairly quickly as a potential solution for the ReStore.

Instead, it was determined that a security camera system would be a much better option. Research showed that the cost would be substantially less, and more of our design specifications would be met with a security camera system. After this was decided, it was necessary to determine what kind of system would be best to implement. There were three major types that were compared. One system was a multi-camera system installed by an outside company. The second system was a single camera system that is self-installed by the ReStore. The third system was a multi-camera system that is self-installed by the ReStore. The multi-camera systems will have the ability to record video, while the single camera system will not. In order to determine which of these systems would be the best option, we must check how well they match our design specifications. This is reported in the results section of the report below.

**Findings/Results:**

The three camera systems were all compared with the design specifications in order to determine the best solution to the ReStore’s security problem.

The first system to compare is the multi-camera system installed by an outside company. At first glance, this system seems like a very reasonable way to meet the ReStore’s security needs. A multi- camera system would be able to watch the outside where customers drop off donations. It would also be able to record that data, so that thieves that attack after store hours could be caught. Additionally, a camera could be placed in the room with the garage door. This would make it much more difficult for thieves to walk out with merchandise during store hours. Also, the installation of the system would be easy because the outside company would be doing the work. The company would also be able to provide technical support if problems with the system arose in the future. This system meets three out of the four design specifications. Unfortunately, the cost of this system is a major issue. No matter what company is hired to install the system, it is likely that they will charge more than the ReStore is willing to spend.

The second system to compare is the single camera system. This would be the least expensive option. A single camera can be purchased for about $30. Most likely, an old television can be found by the ReStore for free. The only other potential purchase is an extension cable if the one provided with the camera is not long enough. This means that the total installation cost is only about $40. The best place to put the camera would be in the room with the garage door. The camera could be hooked up to an old small television at the cash register. This would allow for the garage door room to be observed during store hours, and thus reduce the amount of theft. The advantage of such a system is that is very inexpensive and improves security during store hours. The drawback is that, because it has no recording capabilities, it does nothing to thwart crime while the store is closed. Also, it is not as flexible since it has only one camera. This system is definitely within the price range of the ReStore, but lacks some of the qualities that would make an ideal security system.

The third system to compare is a multi-camera system self-installed by the ReStore. This system provides close to the same level of security as a system installed by an outside company, but can be implemented at a much lower cost. The cost of buying all the components separately increases with every camera purchased. More cameras means more wires, more inputs needed on the monitor, and most likely some sort of recording system. However, this cost can be decreased dramatically by buying all of the components in a bundle deal. There are websites that offer great deals on security systems. One website in particular is www.woot.com. It often has a deal on a four-camera system that includes a monitor and recording system for only around $100. This would be a great solution. It is inexpensive, addresses security both during store hours and when the store is closed, and provides cameras for all areas of the store. The only possible downside is that it may be the most challenging to install. In all honesty though, we do not think that will be a major issue. The ReStore should not have much of an issue installing the system given that it is prepackaged and ready to go out of the box. Overall, this is the solution that is recommended for the ReStore.

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| --- | --- | --- | --- | --- | --- |
|  | Cost | Protects when open | Protects when closed | Easy to install/maintain | |
| Single-camera | 3 | 2 | 1 | 3 | |
| Multi-camera | 3 | 3 | 3 | 2 | |
| Outside company | 1 | 3 | 3 | 3 | |
|  |  |  |  |  | |
|  | Total |  | Key |  | |
| Single-camera | 9 |  | 1 - Does not meet objective | | |
| Multi-camera | 11 |  | 2 - Partially meets objective | | |
| Outside Company | 10 |  | 3 – Meets objective | |  |

**Conclusions:**

The ReStore needs a security system that is inexpensive, protects merchandise during store hours and while the store is closed, and is easy to install and maintain. The system that we recommend is a multi-camera system self-installed by the ReStore. By regularly checking www.woot.com, a four-camera system can be purchased for only around $100. This system has recording capabilities, so the store can be closely observed during the day, and the activity can be recorded overnight. This system would likely be fairly simple to install, and thus fits all of the design specifications. There are two main alternatives to this. One alternative is having the system installed by an outside company. This would sacrifice cost for an upgrade in effectiveness and ease of installation. The other alternative is having a self-installed single camera system. This would sacrifice effectiveness for an upgrade in cost.

**References:**

"Closed-circuit Television Camera." *Wikipedia, the Free Encyclopedia*. Web. 08 Dec. 2011. <http://en.wikipedia.org/wiki/Closed-circuit\_television\_camera>.

"Closed-circuit Television." *Wikipedia, the Free Encyclopedia*. Web. 08 Dec. 2011. <http://en.wikipedia.org/wiki/Closed-circuit\_television>.

*Woot: One Day, One Deal*. Web. 08 Dec. 2011. <http://www.woot.com/>.